

HOW TO MAKE ETCHINGS

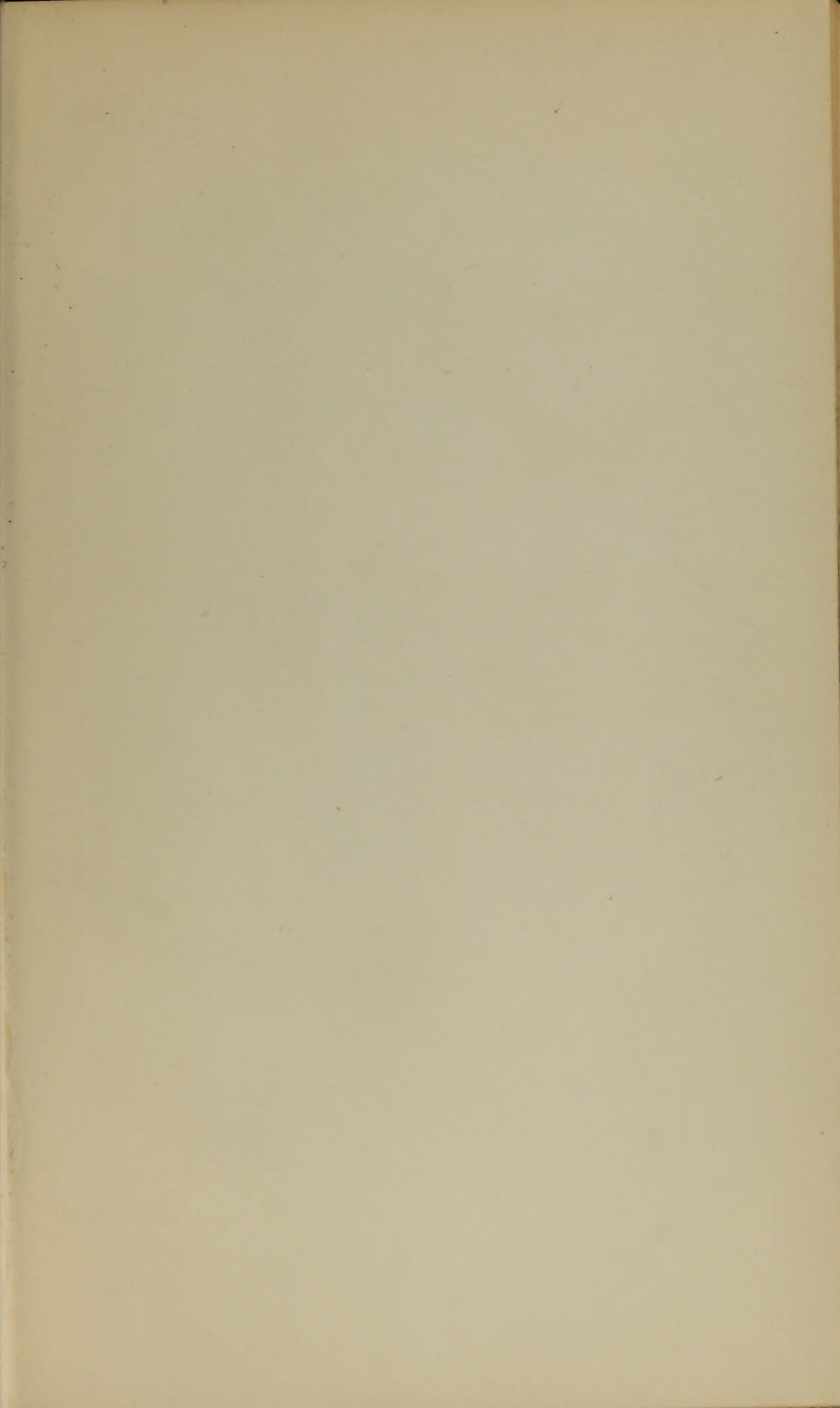
JOHN J. BARRY

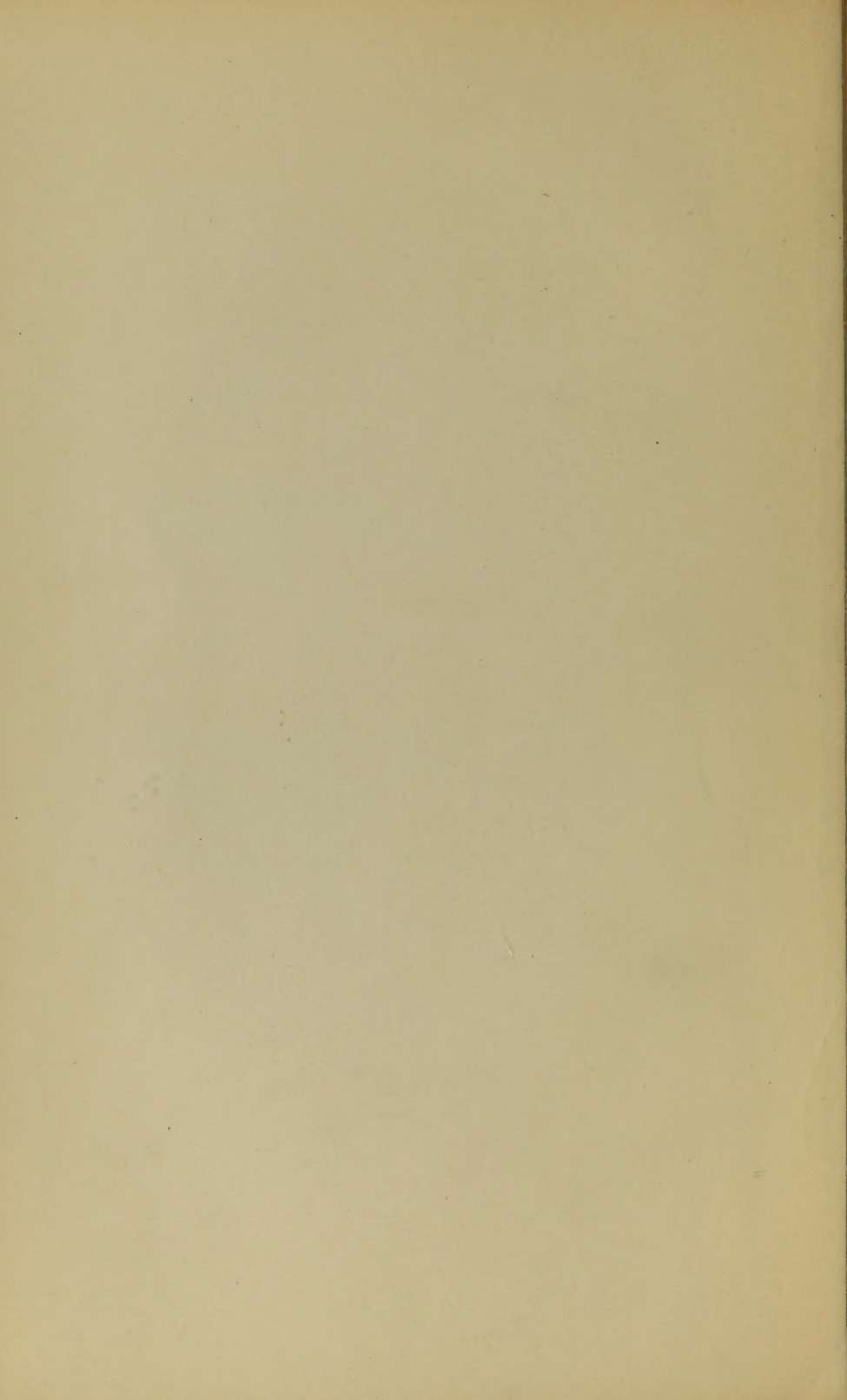


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HOW TO MAKE ETCHINGS

By JOHN J. BARRY



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FOREWORD

In the following pages I have embraced all of the essentials of the etcher's art and have endeavored to make the various phases of the process easy to follow. The initial results are always uncertain. Hammerton said that etching was always a chemical experiment, but Sir Frank Short, counters with, "Where there is copper there is hope," hence its fascination. The two principal processes, etching and dry-point, have been treated. In this short treatise it has not been possible to touch upon many of the minor points such as the perchloride of iron bath, which is rarely used nowadays, the space being used to describe the manner of handling nitric acid and the methods in vogue among the majority of the etchers. As a word of encouragement to beginners I may say that even experienced etchers rarely evolve a satisfactory plate at the first biting. The plate will stand a remarkably great amount of correcting and be left in a fresh state for another attempt nor will it lose in spontaneity if the eradications be carefully done. It is taken for granted that the student of etching has some knowledge of drawing for, to quote Hammerton again, "He who cannot sketch cannot etch."

To the various etchers, Messrs. John Taylor Arms, Ernest Roth, Alfred C. Hutty, Anton Schutz, Ivan Summers and Carl J. Nordell, who lent their work to the illustration of this volume I desire to express my deep gratitude.

JOHN J. BARRY

New York City, Jan. 3rd, 1929

We shall consider etching proper in contradistinction to dry-point, taking up the latter hereinafter. Etching is the process by which the line is bitten into the plate by means of nitric acid and will be treated under the following heads—

Chapter 1—Grounding the plate.

Chapter 2—Transferring the drawing
to the grounded plate.

Chapter 3—Drawing with the needle.

Chapter 4—Biting the plate.

Chapter 5—Printing.

Chapter 6—Correcting the plate.

The materials to be used in the successive operations will be described in their corresponding chapters. A complete list will, however, be found at the back of the volume.

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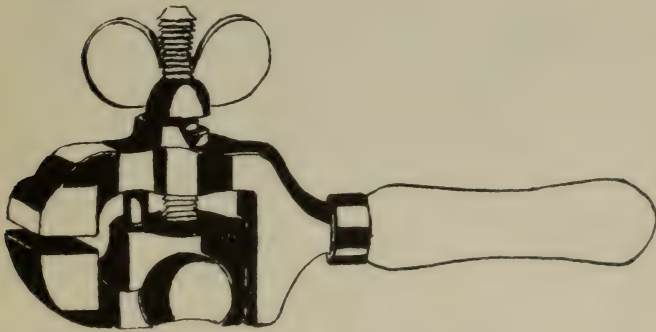
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CHAPTER I.

GROUNDING THE PLATE

Materials required—Copper plate (polished), silver polish, or whiting, ball-ground, hand-vise, ground roller or dabber, gas-lighting tapers, heating device for plate, and "jigger."

The plate should be thoroughly cleaned with silver polish and very soft rags. Whiting and water may be used letting it dry and wiping the powder carefully from surface, edges and back as it would cause trouble if some of it got mixed in with the "ground". The plate must be free from grease; do not touch its surface after polishing.

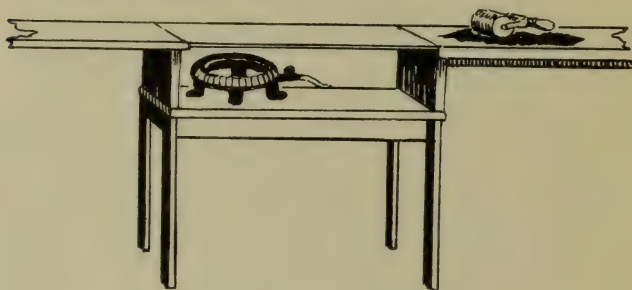


Hand-Vise
Fig. 1

Having cleaned the plate it is then heated.

- A hand-vise must be used. One without a

wooden handle can be purchased cheaply. A small strip of blotter should be glued to under side of one jaw, to prevent its scratching surface of copper. The kind of heater will depend on the monetary outlay. The ideal arrangement for heater, jigger and ink slab is shown in figure 2.



Jigger, Heater and Ink Slab
Fig. 2

The jigger is simply a wooden box, bottom up, or other like scheme. For warming the plate, a gas plate, electric plate stove or even a Sterno heater may be used. The best heater is a gas burner placed beneath a sheet of iron. The sheet of iron should not rest on the stove; allow a space of about four or six inches to intervene. The stove should be placed under one end so that the farther end is somewhat cooler. After the plate is warm enough to melt the ball of ground it can be slid to the cooler end and rolled or dabbed with the ground. Furthermore the gas heater can be adjusted minimizing the danger of burning the ground. For convenience try to have the heater and jigger about the same height. An

electric plate is satisfactory if provided with a switch adjustable to three degrees of heat. If a Sterno is used remove the plate from it a few moments after the ground melts freely and roll it up on the jigger.

The ball of ground is composed of bitumin, Egyptian asphaltum, Burgundy pitch and bee's wax but it is advisable to buy it already prepared as it is difficult to make.

Securing the plate in the hand-vise, with the blotter-covered jaw resting on the polished surface hold the plate upon the heater. In a moment try the ball of ground on the plate. When it commences to melt freely make a few strokes with the ground across the plate and proceed to roll it with the roller or dab it with the dabber. If the heater is very hot do this work on the jigger seeing that the copper is thoroughly surfaced with the ground. Beware of specks of dirt in the ground. Keep the dabber or roller clean. The acid eats readily through such specks.

For a small plate a dabber may be used and this is easily made. Cut out a circular piece of cardboard about two and a half inches in



Ground Dabber and Roller
Fig. 3

diameter and place upon it a bunch of cotton wadding or soft rags. Have it free of lumps. Cover this with a piece of smooth silk or other smooth cloth and pull up around back of the disc of cardboard and tie tightly at the back leaving a length for a hand grip. This should form a smooth, firm pad. The roller is made of rubber and is regularly sold in various sizes at etchers' supply houses.

Clean the roller with kerosene occasionally after using.

When the ground is dabbed or rolled uniformly it must be smoked as at present needle lines would not show plainly. After smoking, the lines made by the needle show golden against an ebony background. Lighted tapers, such as were formerly used for lighting gas jets, are held or twisted together. Three or four are sufficient. Holding the grounded plate face down above the level of the eyes pass the flame all over the grounded surface. Keep the flame moving to avoid burning the ground or it will chip off under the needle while etching. The surface of the plate will grow shiny and black. When it is fairly blackened rest it on the marble slab or other cool surface.

CHAPTER II.

TRANSFERRING THE DRAWING TO THE PLATE.

Materials used—Tracing paper, red chalk or soft pencil, and glue.

There are different ways of transferring the drawing to the grounded plate. The two most popular methods will be described.

In the first the press is used and some labor is saved. Another advantage is that the drawing will reverse on the plate resulting in a positive position in the final print. Make a tracing of the drawing with an "f" or "hb" pencil. Place it in a tray of cold water until it becomes flat and thoroughly wet. Next reduce pressure of the press by removing heavy blanket. Provide a blotter larger than the plate. Remove the wet tracing and press between other blotters or old newspapers until it is free of surplus moisture. Place the grounded side of the plate down over the pencilled side of the tracing. Fold the margins of the tracing over the back of the plate and carefully lay tracing uppermost upon the moving bed of the press. After placing the blotter over this to prevent the edges of the plate cutting the blanket cover all with the blanket and run it through the press. The grounded side of the plate with its tracing on top must, of course, be uppermost. In folding the dampened tracing's edges over the back of the plate fold back two

parallel sides only and keep these edges parallel with the press roller when running it through the press. Do not omit to draw a border around the tracing the exact size of the plate and use it as a guide for placing the plate over the tracing else the tracing will come off crookedly on the plate. The tracing will be found to have enlarged in the bath.

The second method also requires a tracing unless the original be made on thin paper such as Bond. First a sheet of tracing paper about twice the size of the copper plate is marked in the centre with a frame the exact size of the plate and this is chalked or graphited with a soft pencil. Rub afterwards with the finger and blow off surplus chalk dust. This is folded over the grounded side of the plate, chalked side to the grounded surface.

Draw the edges of the paper over the back of the plate and glue tightly. The tracing of the drawing is spread face down over the chalked sheet of tracing paper and folded and glued in the same manner as the first sheet. If the drawing is but faintly discernible it should be inked or if reversal in the etching is of no moment fold the tracing over the plate tracing uppermost. Draw over this with a sharp "two h" pencil, or harder. Keep the pencil well pointed to make a sharp transfer with delicate lines. When finished remove the tracing sheets and dust off the surface of the plate with a soft cloth to remove surplus chalk dust.

Some etchers prefer to work on the plate di-

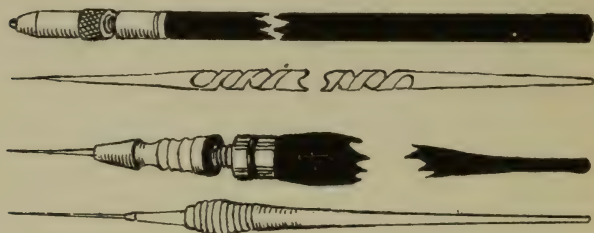
rectly out of doors but it is sometimes difficult especially in warm weather when the ground tends to soften.

CHAPTER III.

DRAWING WITH THE NEEDLE.

Materials used—Tracing paper screen, etching needles, ball ground, turpentine, and camel's hair brush.

When etching indoors where the light will emanate from one or two sources it is rather difficult to see the lines made with the needle and a screen should be made. It should be about the size of the lower half of the window in front of the artist's table. The screen is simply a frame over which a sheet of tracing paper has been drawn taut and glued.



Etching Needles and Holders

Fig. 4

Needles are made in various styles. Any sort of a holder into which may be fastened a darning needle will do. One may be made by splitting a lead pencil and removing the lead, inserting the

needle in the groove and gluing the halves together.

To sharpen the needle—Rest the needle crosswise on the palm of the left hand with the end of the needle almost flat on the stone, which should be an Arkansas Hard oil stone. Now place the right hand crosswise over the left palm with the fingers pointing downward. Allow the handle of the needle to protrude through the third and fourth fingers of the right hand and pressing down on the stone commence to roll the needle along the stone, back and forth by rubbing the right palm on the left which latter should remain stationary.

When a sharp point has been effected it will be necessary to reduce it somewhat to prevent its catching into the copper for the needle should be capable of free movement in all directions over the surface of the plate. Before commencing work on the plate try out the needle on the back of another piece of copper. The needle must penetrate the ground completely. A dull needle fails, in spots, to cut through the grease on the plate caused by the ground. In these cases the lines will be broken up and sometimes appear as a series of dots. On the other hand the surface should not be deeply scratched or extra vigorous biting will result in such places. One can feel when the needle is reaching the "skin" of the plate. When the needle catches into the copper too easily round the point slightly thus—Hold the needle point downwards on a piece of cardboard and swing wide circles on the cardboard using

free wrist movement. Let the circles gradually grow smaller to finish the point.

If the needle catches only occasionally draw its point a few times over a strip of "two o" emery cloth.

In drawing with the needle hold it as vertically as possible so that the lines will be fine. Do not attempt to regulate values by pressure of the needle as in other graphic mediums. Values in etching are achieved through the medium of the nitric acid and stopping-out varnish.

To the beginner the lines will appear closer together than they really are owing to the shine. Strive to make the individual line interesting. Study the prints of good etchers and note their handling of the line to keep it from becoming wiry and monotonous. First attempts will likely be harsh in effect and lacking in variety of line. Perhaps the lines will be too far apart and coarse in quality. Copying the work of good etchers at least in part is good practice to acquire technique and control of the acid.

This is the method adopted by Sir Frank Short with beginners in his class. Reproductions may be traced and then transferred to the plate and etched. Many fine books of reproductions are procurable at a moderate price.

Many etchers favor working out of doors direct from the subject. This was advocated by the late Mr. Joseph Pennell. However the manner of working from sketches has many devotees among the foremost etchers. Every student of

etching should study the works of Rembrandt, the father of etching, and Whistler.

For first attempts use a small plate merely to become acquainted with the various phases of the medium. Do not adhere too rigidly to the expedients of pen and ink drawing such as making the lines on distant objects far apart and the lines of foreground parts closely knit. The contrary obtains in etching as the "distance" is stopped out first. After doing a few plates one may be guided to a great extent by discreetly feeling the bitten lines with the point of the needle to ascertain the depth to which they are bitten.

In parts of the plate to be more deeply bitten avoid very acute angles in cross hatching as holes will result in the deltas thus formed. In places where biting is to be of moderate duration cross hatching may be done in four, five or more directions for the purpose of getting deep shadow effects, such as under arches, open doorways and windows. Do not be in too great a hurry to do huge plates. Some of the greatest plates ever done were small ones. Whistler advocated the small plate. A suggestion for a first plate would be one of different kinds of lines variously spaced, cross hatching, and other kinds of technique. Stop out parts of this plate at various intervals. Keep the proof and plate for future reference as much may be learned therefrom. Errors in drawing on the plate may easily be corrected before biting the plate thus—Dip a camel's hair brush in turpentine and apply the brush to the ball of ground until the ground begins to dissolve. When

it comes on to the brush thickly enough touch up the error on the plate and let it dry. when the correction can be made with the needle.

Sometimes a plate which has stood a long time between grounding and drawing upon it gets very cold and the ground flakes off under the needle. Warm the plate only slightly. If the trouble continues the ground is burnt. It must then be re-grounded.

CHAPTER IV.

BITING THE PLATE

Materials needed — Nitric acid, feathers, stopping-out varnish, blotters, two enamel trays (one with water) camel's hair brush and ammonia. The last named is in case of accident. If the fingers or clothes get splashed with acid use the ammonia as this neutralizes the effect if applied quickly.

Biting is the process by which the lines are bitten into the plate. Nitric acid is used and C.P. (commercially pure) must be specified when buying. There are two methods commonly used in this process. They are: the bath method and the feather method.

The former will be first considered. The plate must be carefully painted all over the back and edges with stopping-out varnish to protect it from the nitric acid. The time for drying will depend upon the consistency of the varnish; if it is thin more time is required. Stopping-out varnish may be bought from dealers in etchers' supplies but can also be easily made. Fill a self-sealing fruit preserve jar with Egyptian asphaltum and turpentine, about half and half. Place it near a steam radiator or in the sun for a few days occasionally turning it end for end. Stir now and then too. When dissolved it should easily handle on the paint brush but should not be too thin and

watery. If it is too thin dissolve more asphaltum into it and if it is too heavy use more turpentine.

The stopping-out varnish having dried place the plate in an enamel or glass tray containing acid and water mixed in the following proportion—

2 parts acid
5 parts water.

If the action is delayed more than five minutes add a little more acid, first removing the plate from the bath. Mix thoroughly. When the acid commences to bite froth will appear on the plate. This must be cleared away with the feather or biting will be impeded and specks may result on the copper. After clearing away this froth permit it to "bubble" a few more times when the "distance" should be sufficiently bitten. Using a sliver or wedge of wood lift the plate from the bath and place it in the tray of water. Wash the finger tips to prevent burns from the acid. Do not lean too closely over the acid or inhale it deeply as its fumes are injurious to the eyes and throat. In the summer-time the work may be carried on near an open window so that fumes may be wafted aside. The action of the acid will be accelerated in a warm room.

Remove the plate from the water and gently press blotting paper over it until dry and then paint out the portions finished with the stopping-out varnish letting this dry.

In like manner finish the rest of the plate. Kerosene will get rid of the stopping-out varnish and ground on the plate.

The second method may appeal to the student more strongly than the first. In this it will not be necessary to paint out the back and edges with the varnish and no tray is necessary. The acid is mixed in greater strength. Use the water and acid in equal proportions to start the plate and when it is biting all over it may be strengthened if desired. Too much acid, though, may injure the ground. As the greasy ground repels the acid it will be necessary to use saliva to make it stick. Spread saliva all over the surface of the plate until it sticks fairly well then take up the acid on the feather and quickly but gently spread it over the work. Keep the entire surface covered as biting must be uniform. Tarrying too long in one spot will favor that spot in the biting.

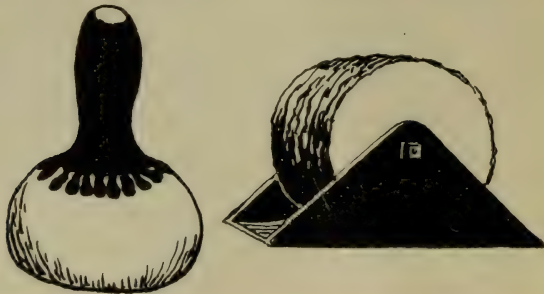
If action seems retarded use more pure acid. It is well to let the plate bite all over in a weaker acid first and then to increase its strength.

When the lighter values of the composition are finished press the blotter over the work and apply the varnish. Variety of line may be had by stopping the action of the acid with blotter in places. On long vertical lines thick and thin effects of the line may be obtained by applying the acid to some spots while stopping out others. Note how this is done in some of the prints herein reproduced. A curious effect of the acid upon copper plate is that lines closely grouped bite more vigorously than isolated ones. Etchers take cognizance of this idiosyncrasy when drawing upon the plate.

CHAPTER V.

PRINTING

Materials needed—Etchers' press and blankets, ink slab (marble or ground glass is best), tarletan, mosquito netting, ink dabber or roller, palette knife and black and brown inks. Genuine etching ink is essential. Glass dishes, such as deep butter dishes with covers, are suggested as containers in which to store the ink left over after printing. Keep the ink under water or it will quickly harden. The best black ink is imported and can be purchased in tubes. Some of the domestic inks sold as etchers' ink for some reason give much trouble. The ink comes out of the lines too easily while the surface of the plate cleans with difficulty. As the ink may be unpleasantly black warm it up with a little brown or other warm colored ink.



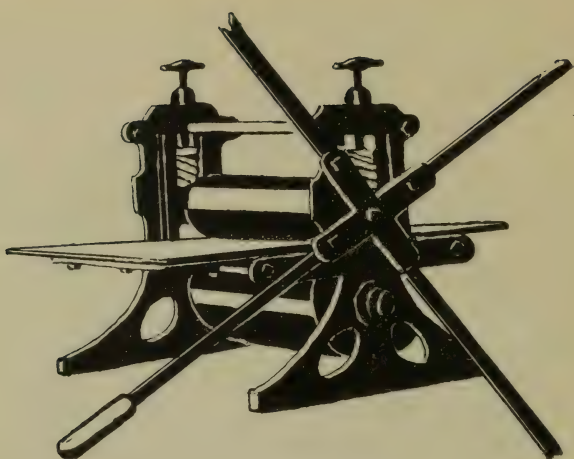
Ink Dabber and Roller

Fig. 5

If the ink is too stiff thin it with plate oil which is sold by printers' supply houses. Use it very sparingly and if possible, not at all. The palette knife should have a long slender blade.

The roller is made of pressed felt with an iron holder which is removable. An ink dabber suitable for small plates is easily made. It should be more solid than the ground dabber. Make it in the same manner except for the cardboard which is not used. Make it hard and smooth. A stocking darter makes a good base for an ink dabber. Just pad it over several times. A chamois skin makes a good outer cover. The best of all dabbers is the fingers. It is necessary to get the ink well into the bitten lines of the plate. Kerosene and mechanics hand soap used successively will remove the ink from the fingers. The next items are the wiping muslins. Mosquito netting is used and this is followed by tarletan to finish the wiping. They may be bought at any dry-goods store.

The mosquito netting is used for the first wiping to remove the superfluous ink, the final wiping being given with the tarletan. They both contain much sizing and must be softened a little. Crumple each between the two fists and rub vigorously shifting the cloth around. This will prevent their scratching the polished surface of the plate. Under no circumstances wash them to soften as they would then clean the ink out of the lines of the plate. Tear off enough of each to make a good handful and spread them out flat. Pull the corners over to the center and repeat. The re-

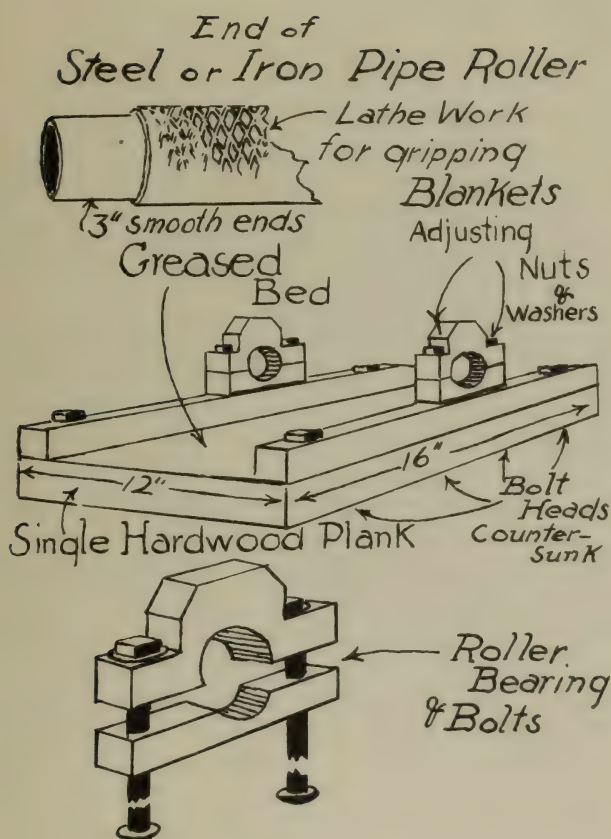


Iron Press
Fig. 6

sultant pad should be free of lumps which might take ink from the lines. Pull some of the free ends up between the fingers giving a good grip upon the pad.

The home-made press may be built for \$25.00. The hardest wood procurable should be used. As the bed of the press sometimes shows a tendency to sag after a time it should be reinforced with steel strips beneath. While one may have his printing done by a professional printer it is advisable for the student to do this himself as successive proofs are needed to complete a plate and much delay is thereby saved.

The blankets are three in number and of two kinds. The uppermost blanket on the press bed is the thickest. It is of felt and should be about



Home-made Press

Travelling bed not shown should be length of press and width of space between the two side strips on which rests roller bearing. Measurements merely suggested. Make of very hard wood. Ends of roller must be smooth.

Fig. 7

half as thick as the felt used in lining horse collars. A thinner felt, though, may work all right. The nethermost blankets are also of felt and much thinner. Use any common grade of felt such as is used for billiard tables, or padding under table cloths but it must be firm without lumps. Be sure it is hard and without ridges. Do not try to put all the blankets through under the roller at once. Let the edges of the two thin ones be in advance of the heavy upper one, step-like. The adjusting screws of the press must give uniform pressure. Run a plate with a blotter upon it through the press and examine the imprint of the plate's edges upon the blotter. This will show if the pressure is uneven. Of course the plate must be placed in the middle of the press bed.

Having removed the ground and stopping-out varnish from the plate with kerosene or turpentine we are ready to make the print. Holding the plate with hand-vise place it upon the heater and let it get warm, not hot. With the dabber or roller cover it with ink working it well into the lines then lay it on the marble slab or press bed to cool. We shall now turn our attention to printing papers. There are a number. Umbria is an Italian paper that comes in two tones, cream and white. This paper should be soaked in water an hour or two. After the paper is pressed between dry botters or old newspapers a few times it is ready for use. No surplus water should appear on its surface. Japanese Vellum is a smooth creamy paper with an antique finish and

it is prepared in the same manner as the Umbria. Arches and Maidstone (English papers) are handled differently. The former comes in cream and white, the latter in cream only. Both contain much sizing and some of this must be removed so that it may be forced down in to the lines of the bitten plate under the pressure of the press. With a wet sponge moisten one side thoroughly as it is spread out on some old newspapers and let it remain thus for a few minutes. Then with a stiff clothes brush, brush it vigorously a moment or two until the sizing comes out in pellets. Brush it lightly to clear the surface and it is ready for use.

We now return to our plate which should be cool. If the ink is very thick on its surface use a card and lightly scrape off some. Then take the coarse mosquito netting and rub a few times in different directions. Using the tarletan wipe with a circular motion turning the plate around a few times. The first proof (trial proof) should be cleanly wiped. Hold the plate against the light and see if any tone remains upon it. When quite bright it will be ready for the press. Place a sheet of blotter on the travelling bed of the press and heat the copper plate to thin the ink. Do not heat it too much for comfortable handling. Place the plate inked surface uppermost upon the blotter resting on the press bed and lay the dampened printing paper over the plate. If the paper is of the variety that must be scrubbed the scrubbed side should come next to the inked surface of the plate. Cover this with



Plate, Clean Wiped
Fig. 8



Plate, Retroussaged
Fig. 9

another sheet of blotter, to prevent the edges of the plate cutting the blankets, and spread the three blankets over all. The ends of the blankets should always be caught under the roller of the press. For the trial proof it is not necessary to clean the edges of the copper plate but for finished prints this be always done. Laying this proof aside prepare to make a second one. This is for two reasons. Firstly — The second print may be stronger owing to the pressure of the press making a good ink base down in the lines. Secondly— It is well to see how the plate *retroussages*. Of course if it is feebly bitten do not attempt to *retroussage* it.

Moisten the paper with the sponge if it is the kind that needs scrubbing. If *Umbria* or *Vellum* is used remove it from the tray of water and place it between several sheets of old newspaper or blotters and leave it a few minutes. Ink the plate as before and when cooled wipe it clean. Turn again to the paper which was left between blotters and if free of water upon its surface place it in readiness near the press. The plate is then *retroussaged* thus—A piece of cheesecloth that has previously been washed, rendering it soft, is used. Make it up into a pad. Heat the plate and when it gets quite warm, but not too hot, brush the pad lightly over the plate.

Do not press down upon the pad; its own weight should suffice. It may also be done this way— Let a stiff end of the pad project and with this gently flick the different parts of the plate, the darkening tones should be discernible upon the

plate. Do not go over any part the second time. If the plate is too hot the effect will be a muddy one. A little experience will be necessary to judge the amount of warming needed. Retroussage when well done is beautiful as it binds the lines together and softens the effect of hard lines without losing the quality of line. Too, one may make a few lines do a great deal of work by thus drawing ink out of them and across the intervening spaces, thus making for "economy of means," that is working with a sparsity of line which gives a pleasing technique.

Some plates do not require retroussage and cannot, in fact, be thus treated. The lines may be too deep and close together in which case "muddiness" would result. In wiping the plate do not polish too brightly over its entire surface. A modicum of tone is desirable as a plate too cleanly wiped often looks bare and cold. Near the edges or in the foreground it can be left quite cloudy. Study the wiping of plates when looking over the prints of well-known etchers. The portion of the plate around the "interest" is generally the most cleanly wiped. In the print "Sunrise" reproduced here the plate was rag-wiped as usual, then vigorously wiped in the bright corner (from which the light is emanating) then retroussaged. Another expedient is cleaning out spots to be very bright with a burnt match then gently touching with the finger tip to tone down the effect. A clean soft rag will be better over large spots. This can be done in such instances as white boat sails with the sun on them or any white object

in the sunlight which it is desired to bring out. Do not over indulge in this as it tends to cheapen the effect.

After a few wipings the tarletan becomes heavy with ink or "fat" as the term prevails. It is really improved when in this condition. The late Mr. Joseph Pennell used to say in his class a "fat rag" was the only one that was any good. There is not so much danger of cleaning up the plate too brightly. Very few plates will yield a pleasant print without tone or retroussage. The technique would have to be exquisite indeed to obviate bareness of effect. To make a bright print without retroussaging (but with tone) this manner may be employed.

Heat the plate and ink. Wipe as usual but with a clean piece of tarletan. Take a fat rag and go over the plate gently letting the weight of the rag rest on the plate and move it around circularly. Go very slowly and you can feel the inky lines of the plate attracting more ink from the rag. The plate will have a minimum of tone, being cold.

If the lines of the plate are deep and close together simply wipe with a fat rag without retroussaging.

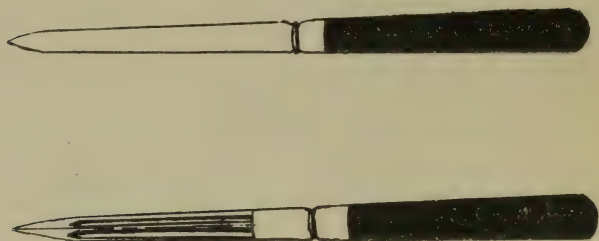
Armed with the proofs and the plate the student will be ready for his corrections. The plate seldom "comes right" the first time even for masters of the art, so do not be discouraged. If one is an enthusiast he will enjoy the entire process. The clean proof shows the exact state of the lines on the plate.

CHAPTER VI.

CORRECTING THE PLATE.

For this one must be equipped with a burnisher, a scraper, which is a three edged knife, a stick of engravers' charcoal, Three-in-One oil, a sheet of "four o" emery cloth, a few rags and jewellers' rouge for polishing.

Some parts of the plate will most probably be over-bitten in places while in other spots the acid has not acted long enough. We shall care first for the overbitten spots.



Burnisher and Scraper

Fig. 10

If they need reducing but slightly a few rubs of the burnisher will suffice. Rub across the lines, using a little oil to prevent bruising of the copper. If the lines are much overbitten it will be necessary to reduce them with the scraper before burnishing down. First see that the edges of the scraper are sharp. Take the oil stone (hard

Arkansas) and press one flat side down hard against the stone pushing forward and backward towards you, not sidewise as in sharpening a pen-knife. Tilt the scraper for a while to ensure the end becoming sharp as this is the part used most often. Sharpen all three sides.

To scrape down the lines of the plate lay the knife quite flat upon the plate, tilting it slightly and scrape gently towards you and diagonally across the line, turning the copper in different positions to avoid wearing a groove in the plate. Scrape gently. Do not try to reduce the line with a few strokes of the scraper. If the plate is badly scored after this operation spread some oil over the work and lay the scraper almost flat and level presenting just enough cutting edge to scrape the surface of the plate. Go back and forth and the scoring on the plate will reduce. It is well to use oil in scraping.

When the lines are somewhat reduced take the burnisher and oil and proceed to remove the scratches caused by the scraper. If it is desired to get rid of certain lines entirely this should be completed with the scraper and then burnished. When, however, it is required to reduce them only, charcoal alone is generally used by good etchers. Use charcoal and water or oil. This requires perseverance. It would be well to try both the charcoal method as well as the scraper and burnisher. One can then decide their preference. The charcoal used for this purpose is not the regular art school kind but engravers' charcoal that comes in thick sticks about two inches

square and six inches long. Keep it free from the bits of copper turned up under the scraper. Much trouble comes from them. If they get into the charcoal or on the inking rag they will scratch the plate. After scraping the plate wash it thoroughly under running water, turning the plate over and edgewise. Also wash the hands.

After burnishing use the charcoal and oil or water then polish with jewellers' rouge and oil. If cloudiness shows on the print in the corrected area it may be necessary to rub still more with the charcoal or polish. If the spot be small use the burnisher and oil rubbing very gently, and in all directions.

When the overbitten lines have been remedied the attention will be turned to the underbitten ones. If they are not too weak the plate may be grounded in the ordinary manner but not smoked. Melt the ground well into the deep lines for protection. The acid sometimes rebites these lines if the ground is thin. Over the weak lines to be corrected run the roller until the ground is thin and transparent. If the lines are still difficult to discern it will be necessary to use a transparent (re-etching) ground. Sometimes it is well to re-heat the plate after applying re-etching ground and melt a little ordinary ball-ground into it to make the lines more distinct. The re-etching ground is like the ordinary ground except that the black asphaltum is left out of its composition. There is, too, a re-biting ground sold. This ground is applied cold and must be rolled up thinly and uniformly on the slab of

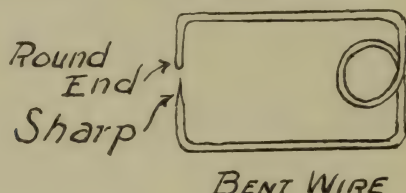
marble or glass until the roller has a thin even layer on its surface. It is then rolled onto the plate. With this ground no needle work is necessary to re-bite the plate. Simply apply the acid. Ordinary ground may be used in this way if one is very careful.

Warm the plate slightly while warming a spare piece of copper on another part of the heater. The extra plate used for melting the ground should be hot but the plate with etching should be only warm. After rolling up a thin uniform layer of ground on the roller spread it over the etched plate in two or three directions but not for too long a time. The acid may then be applied with a feather to the weak spots without the intervention of the needle. If it is decided, for safety, to use a re-etching ground instead of a re-biting ground sharpen the needle as finely as possible on the oil stone and go into the weak lines and re-bite. No stopping out is necessary, simply blot.

Sometimes after the plate has been wiped for printing depressions in the plate will be seen and these will be darker in tone than elsewhere. The wiping rag has not reached into these hollows. They may be cleaned out with the index finger after rubbing the finger across a cloth. Then follow up lightly with the tarlatan. This is known as "fake wiping". The proper way is to get rid of the scooped out patch. One way is to scrape around the rim of the depression cautiously extending the field of operations on all sides to lessen the abruptness of its edge and then burnish.

If the pit thus dug with the scraper is too great for this treatment it must be knocked up from the back.

To knock up the plate from the back procure a jewellers' anvil which is a block of steel with a polished face, and a pair of callipers. One of the points of the callipers will have to be sharpened. A couple of mechanics' punches, one small and one of moderate size will also be required.



Home-made Callipers

Fig. 11

Small callipers may be fashioned from stiff wire and will prove serviceable for small plates. The points of the callipers when closed must come exactly together.

Place the copper plate, face uppermost, with the sharp point of the callipers against the under side and move the point around the area to be raised. The under point of the callipers should now have traced a corresponding design on the back of the plate. Lay the plate face down on the polished side of the "anvil" and with the punch and a hammer proceed to punch carefully stopping frequently to note progress on the face of the plate. When the depression has been thoroughly knocked up it will be necessary to re-

duce the bumps on the other side of the plate. This should be done with charcoal and water. Keep the plate covered with water during this operation. The scraper and burnisher may be used if desired and finished with the charcoal and polish.

Zinc may be used for experiments though there is some difficulty in making the ground adhere to its surface owing to the zinc being inherently greasy. Scraps of zinc may be procured from the scrap heap in any engravers' plant. The acid is diluted in weaker strength than for copper. Zinc plates do not yield as many prints as copper but it should stand up for a dozen or more impressions. It is interesting to note that the nitric acid acts differently upon the zinc than with the copper. All lines bite consistently whether grouped or isolated. Its action with copper has already been described. Never use the same acid for copper and zinc.

SKETCHING FOR ETCHING.

Use an "hb", "f" or "b" pencil and keep it finely pointed. Whatman's hot pressed paper commonly used for pen drawing is admirable for the purpose, making for an incisive and delicate line. Do not work for heavy shadow effects but concentrate on the line possibilities. Indicating the shadows is sufficient. Such a sketch will be of more use in the studio. Subjects pleasing to the painter will not necessarily make a good etching as the needle may be inadequate to the subject.

The finished print should look as if the artist got over its surface easily and without straining for effect.

A good composition is one in which there is about three quarters white paper and a principal spot of dark well placed and just enough gray for a "foil".

Good etchings are made with both coarse and delicate lines. This will depend mainly on the subject.

CHAPTER VII.

THE DRYPOINT

Drypoint will appeal to some for the simplicity of its *modus operandi*. Few tools are needed and no acid is used. Nor need the plate, necessarily, be grounded, unless it is for transferring the sketch to the plate as for an etching.

Zinc as well as copper may be used but it will not stand up for more than three or four impressions. It is, however, well adapted to initial attempts as this metal cuts very easily.

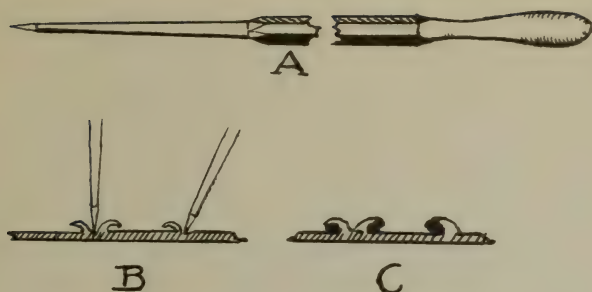
Drypoint is a species of free hand engraving and may be combined with the etched line or for touching up errors in an etched plate. When the "burr", later described, is removed from the line it appears much the same as the bitten line.

The tools needed are, a dry point needle, oil stone, oil, rags and black oil point.

The drypoint needle is sharpened conically to cast up a good burr. It is the burr that holds the ink, depth of line is not considered. In sharpening the needle hold it at a 45 degree angle. It is imperative that the needle be kept sharp at all times during the work. Sharpen frequently. The cutting of the plate with the needle causes a furrow or burr to be thrown up. If the needle is dull this burr may be "rotten" and crumble under pressure despite its heaviness. The burr causes



Dry-Point
Fig. 12



A—Dry-Point Needle Sharpened and Burnisher on other End.
 B—Double burr resultant from vertical needle.
 Single burr made by slanting needle.
 C—Burrs inked.

Fig. 13

the beautiful velvety quality characteristic of a drypoint.

If the needle is held vertically a double burr is thrown up. If the needle is held at an angle a single burr is caused. This will be a phase for experiment.

Another advantage of dry point is that one may work out of doors directly from the subject as preliminary sketching may be done with the needle delicately. These lines are easily eradicated with burnisher and oil. To follow the progress of the work and note its strength rub black oil paint into the lines and wipe off. It is well to spread a film of paint over the entire surface of the plate before commencing work.

The transfer method as employed in etching may be used scratching the transferred sketch a little more deeply. These lines are then used for a guide after removing the ground with kerosene.

As to technique, — Little burr is used on the “distance”. It may be removed with the scraper using it very gently to avoid scratching. Do not burnish down such lines as the burr crumbles over into the line causing future trouble. Get rid of all “scrapings”.

Copper plates yield from six to thirty prints of dry-points depending on the technique employed. When an edition is to be run off the plate is steel-faced in an electro-plating bath.

Wiping a drypoint is somewhat different from the manner of the etched plate. The plate is only partially wiped with the mosquito netting or Tarletan and when the ink is fairly well broken up and is partly clear it is finished by hand.

Proceed as follows—Place a clean cloth over the knee or left arm and with the base of the thumb resting on the plate rub lightly and quickly. Give the hand an upward tendency and wipe away from you. Occasionally dip the base, or ball of the thumb, in a pan of whiting and wipe on the cloth. After every stroke across the plate wipe the base of the thumb on the smock or piece of cloth. Turn the plate around occasionally. Experience will be required to gain deftness. Ham-merton said it was necessary to have the “arm of a blacksmith and the palm of a Duchess” for this operation. Too much rag wiping tends to break down the burr but if only a few prints are desired one may use a very clean piece of tarletan for the finishing process.

CHAPTER VIII.

PRESSING AND MATTING THE PRINT.

Before pressing the print it is advisable to let it dry so that the ink may become hard. Subjecting a freshly made print to pressure results in a breaking down of the ridge of ink forming the lines. These ridges impart a crispness of appearance to the print.

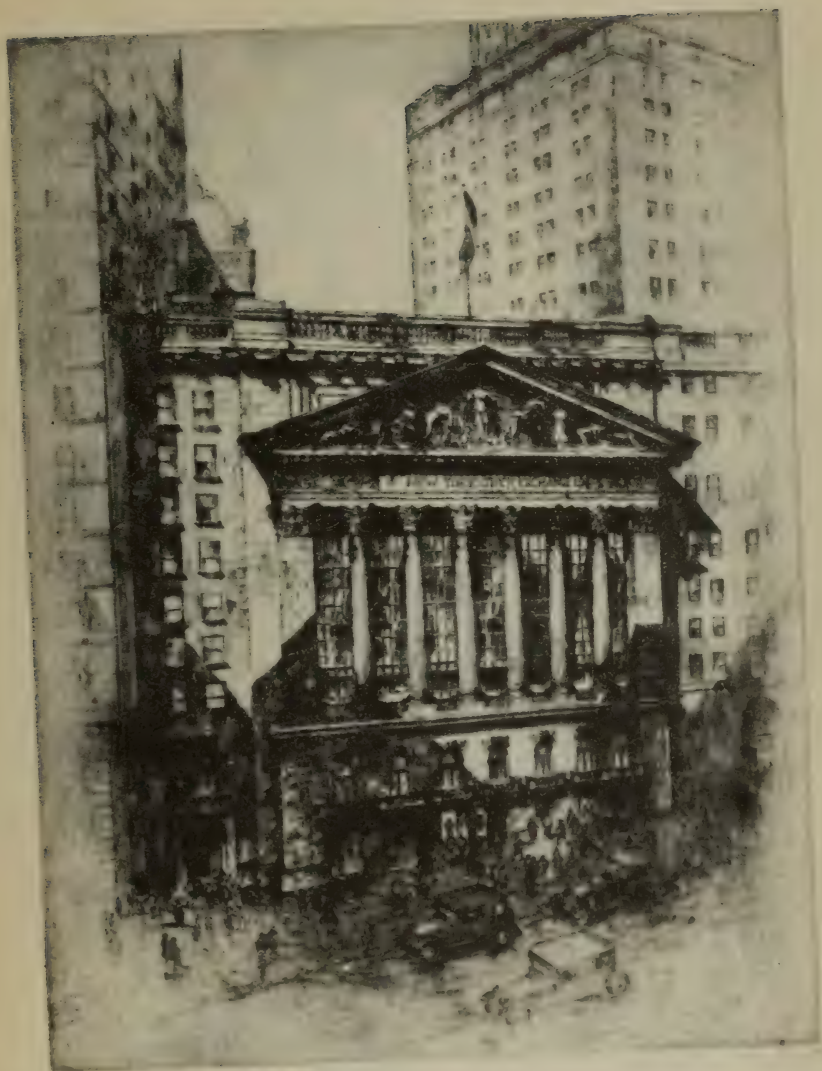
Place the print in a tray of water and when it lies flat press it between blotters or old newspapers to remove surplus moisture, then press between blotters allowing two or three above and beneath. After about six or eight hours change the blotters. A flat object such as a sheet of glass or board with a weight of about ten pounds should be used for pressing.

The aperture in the matt should be large enough to leave a margin outside the plate mark of a quarter of an inch all around and half an inch at the bottom to show the pencilled signature on the print.

Do not use cream or other colored matts as they rob the print of its interest and make it cold in appearance. Use white or light gray. Good matts are formed of two pieces of equal size and hinged on the inside with a strip of gummed tape. The print is lightly fastened on the back portion. Do not gum all over the back of the print; only two slight dabs at the top. Tacking it down at all four corners will cause wrinkles later on.



Etching—John Taylor Arms



Etching—Anton Schutz



Etching—John Taylor Arms



Etching—Carl Nordell



Etching—Ernest D. Roth



Drypoint—Alfred C. Hutton



Etching—Ernest D. Roth



Etching—Ernest D. Roth



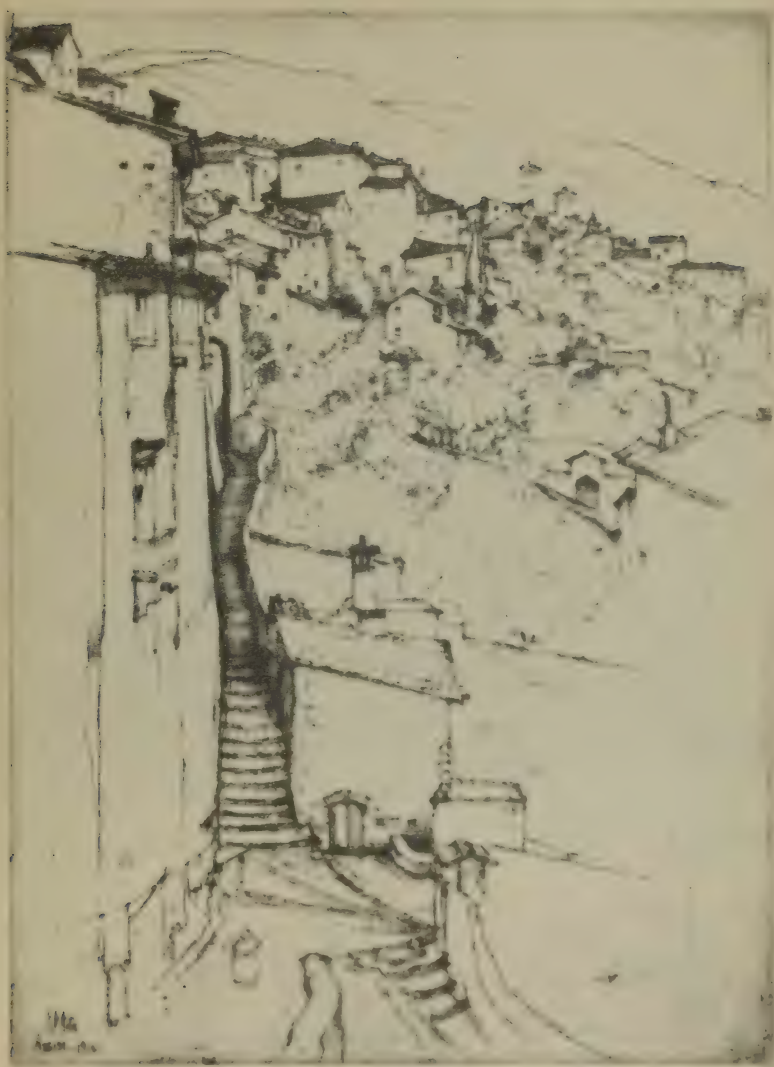
Drypoint—Alfred C. Huty



Etching—Alfred C. Hutton



Etching—Alfred C. Hutton



Etching—Ernest D. Roth



Etching—John Taylor Arms



John J. Barry

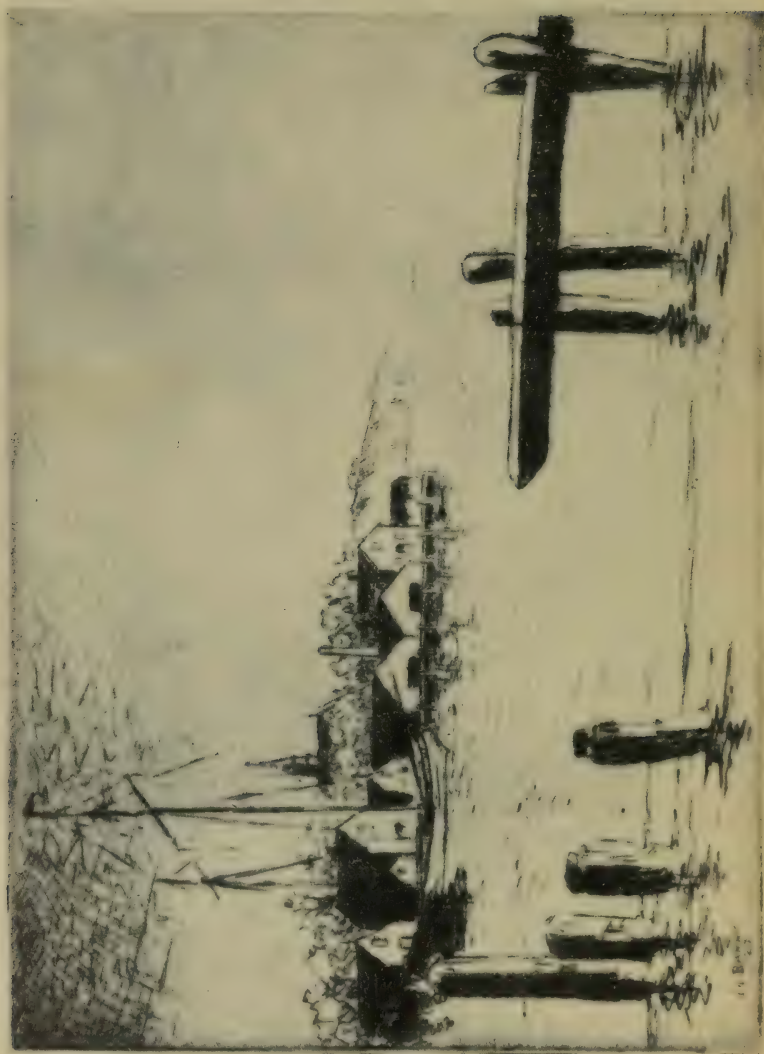
Etching—John J. Barry



Etching—John J. Barry



Etching—John Taylor Arms



Etching "Sunrise" John J. Barry

LIST OF MATERIALS FOR ETCHING

If there is any difficulty in procuring materials for etching the publishers of this volume would welcome any communications.

Copper plates
Silver polish
Rags and Cheese Cloth (washed)
Hand-vise
Ground
Stopping-out Varnish
Ground roller or dabber
Wax lighting tapers
Red chalk
Tracing paper
Etching needles
Dry point needles
Nitric acid (c.p.)
Feathers
Burnisher
Scraper
Emery cloth (four o and two o)
Jewellers' rouge
Three-in-One oil
Glass or enamelled trays
Glass or enamelled funnel
Glass stoppered bottles (acid fumes eat corks)
Engravers' charcoal
Sponge
Clothes brush

Water vessel
Etching papers
Blotters and old newspapers
Etching ink
Ink roller or dabber
Tarletan
Mosquito netting
Black oil paint
Glue
Egyptian asphaltum
 (for making stopping-out varnish)
Camels' hair brushes
Kerosene
Heater
Marble slab, or ground glass
Jigger (wooden box upturned)
Turpentine

